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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,940	06/27/2007	David John Parkinson	KCC-030815 (PET-1018US)	2364
64065 7590 02/26/2009 CAMERON INTERNATIONAL CORPORATION P.O. BOX 1212 HOUSTON, TX 77251-1212			EXAMINER MELLON, DAVID C	
			ART UNIT 1797	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,940	Applicant(s) PARKINSON, DAVID JOHN	
	Examiner DAVID C. MELLON	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-18, 21-23, 29 and 34-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-18, 21-23, 29 and 34-37 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the

- displacement means is powered by a device selected from the group consisting of a hydraulic or pneumatic actuator, an electric actuator, and springs of claim 18
- the fluidizing unit of claim 22
- the heating device of claim 23

must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New

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Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 5-6 are objected to because of the following informalities:

Claims 5 and 6 contain the recitation “has an inlet let into” which is grammatically incorrect.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 21 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 21, the limitation “the displacement means is powered by the pressure differential between the inflow and outflow of the separator” is not enabled such that one of ordinary skill in the art at the time of the invention would have been able to make or use the invention as claimed. The specification discloses the possibility of powering the displacement means via a pressure differential on P4/L29-30, however, the specification does not set forth any structure or method which would in fact allow

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one of ordinary skill in the art to perform the task or build the apparatus. Applicant has not set forth in the claims or specification any specific structure related with allowing a pressure differential to power the displacement means of the inner cyclone liner.

Furthermore, there are no described exemplary apparatus which make use of a pressure differential disclosed in Applicant's specification or referenced prior art.

Accordingly, one of ordinary skill in the art at the time of the invention would not have been enabled to make or use the pressure differential driven displacement means without excessive and undue experimentation.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 2-4, 6, 8, and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 2, the recitation of "the cyclone chamber comprises an outer cyclone liner" renders the claim indefinite. The claim is indefinite because there is no structural relationship laid out between the cyclone chamber and the outer cyclone liner such as to allow one of ordinary skill in the art to determine how the two components are to be assembled and configured. Furthermore, it is indefinite as to whether the outer cyclone liner is intended to be the cyclone chamber, on the outside of the cyclone chamber, or inside the cyclone chamber between the cyclone chamber and the inner cyclone liner. For the purpose of this Office Action and in view of the phrasing "the

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cyclone chamber comprises an outer cyclone liner”, it will be interpreted to mean that the cyclone chamber is in fact the outer cyclone liner.

Claims 3-4, 6, and 8-9 are rejected as being dependant upon rejected indefinite claim 2.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 10-11, and 16-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Dewitz (USP 4,810,264).

Regarding claims 1 and 10, Dewitz discloses an adjustable cyclone separator (title) in figure 2 comprising:

- a cyclone assembly (entire figure 2 is a cyclone assembly) which also doubles as a housing
- an inner cyclone liner (skirt tube 35 with vortex stabilizer 26)
- displacement means for displacing the cyclone liner relative to the chamber (gear tube, drive gear, and handle).

Regarding claim 11, Dewitz further discloses the housing has an inflow, overflow, and discharge chamber (swirl zone 30 and inlet, catalyst outlet and cone above, clean gas outlet 20 and outlet pipe).

Regarding claims 16 and 17, Dewitz further discloses a threaded spindle and handle as the displacement means (see figure 2, drive gear, guide tube, handle 40).

9. Claims 1-11, 13-14, 18, and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Hakola (USP 7,185,765).

Regarding claims 1-3, Hakola discloses a cyclone with in-situ replaceable liner system and method for accomplishing the same (title) in figures 1-13 comprising:

- a cyclone chamber with an outer liner (14)
- an inner cyclone liner adapted to be received within the cyclone chamber (liners 38, 40, 42, 96, 98, 104)
- displacement means for displacing the inner cyclone liner relative to the cyclone chamber in a longitudinal axial direction (crane, C11/L15-45).

Regarding claim 4, Hakola further discloses seals at the lower end of the cyclone liners between the inner and outer cyclone liners (Seals, C11/L1-15).

Regarding claims 5 and 6, Hakola further discloses an inlet into the periphery of each of the inner and outer cyclone liners (inlet housing 15 feeds into both the outer cyclone liner and the inner liner 38).

Regarding claims 7 and 8, Hakola further discloses that the inner and outer cyclone liners have an overflow outlet and solids discharge outlet (19, 34).

Regarding claim 9, Hakola further discloses withdrawing the inner cyclone through the overflow of the outer cyclone in figures 13a-c.

Regarding claim 10, Hakola further discloses using a housing (cyclone 14 is housing the cyclone and cyclone liner system).

Regarding claim 11, Hakola further discloses the cyclone system has an inflow chamber (16 and 94), overflow chamber (19), and discharge chamber (32).

Regarding claim 13, Hakola further discloses the cyclone chamber is substantially in the inflow chamber (cyclone and liners 96,98,104).

Regarding claim 14, Hakola further discloses that the inner cyclone liner is placed concentrically within in the cyclone chamber (see in figures 1-13).

Regarding claim 18, Hakola further discloses the use of a crane to power the displacement means (C11/L15-45). While Hakola does not explicitly disclose that the power source is of hydraulic, pneumatic, or electric actuation means, it is well known in the art of cranes that a crane will involve one of those if not all of those.

Regarding claim 29, Hakola discloses a cyclone system.

Regarding limitations recited in claim 29 which are directed to a manner of operating disclosed cyclone, it is noted that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, it has been held that process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that

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states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 15 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hakola (USP 7,185,765).

Regarding claim 15, Hakola discloses all of the claim limitations as set forth above. While Hakola does not explicitly disclose an automatic displacement means involving a pressure differential, it would have been obvious to one having ordinary skill in the art at the time of the invention to have made an automatic system with pressure differential detection since it is known to remove liners when pressure differentials occur or to add liners. Furthermore, it has been held that broadly providing a mechanical or

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automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. *In re Venner*, 120 USPQ 192.

Regarding claim 21, Hakola discloses all of the claim limitations as set forth above. While Hakola does not explicitly disclose powering the displacement means by pressure differential, it would have been obvious to one having ordinary skill in the art at the time of the invention to have incorporated a pressure harnessing system to assist in removal of the liner for the purpose of harnessing power to increase energy efficiency.

13. Claims 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dewitz (USP 4,810,264).

Regarding claims 34-37, Dewitz discloses an adjustable cyclone separator (title) in figure 2 comprising:

- a cyclone assembly (entire figure 2 is a cyclone assembly) which also doubles as a housing
- an inner cyclone liner (skirt tube 35 with vortex stabilizer 26)
- displacement means for displacing the cyclone liner relative to the chamber (gear tube, drive gear, and handle).

Dewitz further discloses withdrawing the inner liner to an axially spaced area from the cyclone chamber to decrease flow pressure and increase flow rate, and also further discloses placing it back into an operative status to increase flow pressure and decrease flow rate (C3/L5-27).

14. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hakola (USP 7,185,765) and in view of Parkinson et al. (USP 5,853,266).

Regarding claim 22, Hakola discloses all of the claim limitations as set forth above. Hakola does not explicitly disclose the use of a fluidizing device affixed to the bottoms outlet.

Parkinson et al. discloses a fluidizing unit comprising a supply duct fed with liquid under pressure and a discharge duct (Abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the hydrocyclone assembly of Hakola to include a fluidizing unit affixed to the bottoms outlet such as the one taught by Parkinson et al. for the purpose of preventing the bottoms outlet from becoming clogged by the increasing amount of separated materials and to take advantage of the energy of the fluid and solids separated out to allow for fluidization of the bottoms product of the cyclone.

15. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hakola (USP 7,185,765) and in view of Hawley (USP 1,755,780).

Regarding claim 23, Hakola discloses all of the claim limitations as set forth above. Hakola does not explicitly disclose the use of a heating system for the cyclone.

Hawley discloses a water filter (P1/L1-5) in figures 1-6 which comprises a cyclone system and utilizes a heating jacket (P2/L30-45).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cyclone system of Hakola to include the use of a heating jacket as taught by Hawley for the purpose of altering the chemical state of substances to permit them to be better separated (Hawley P2/L30-45).

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID C. MELLON whose telephone number is (571)270-7074. The examiner can normally be reached on Monday through Thursday 7:00am-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on (571) 272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tony G Soohoo/
Primary Examiner, Art Unit 1797

/D. C. M./
Examiner, Art Unit 1797